Today's Plan:

Learning Target (standard): I will use the definition of function to evaluate functions with appropriate notation.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

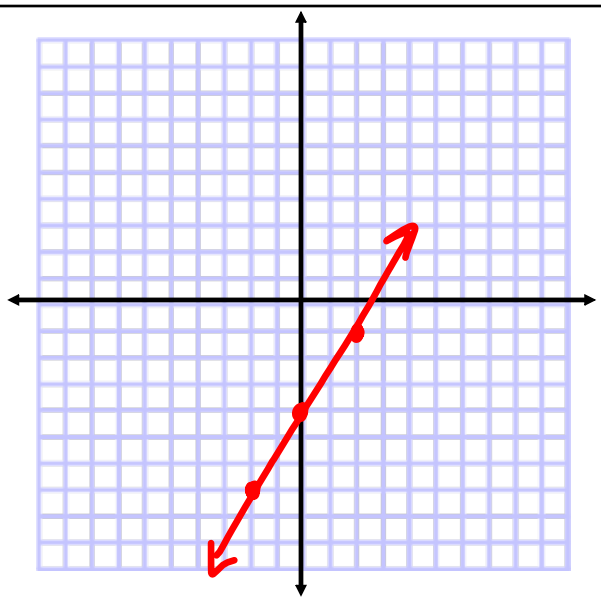
Graph using a *t*-chart.

$$3x - 2y = 8$$

$-2y = -3x + 8$

$y = \frac{3}{2}x - 4$

x	y
-2	-7
0	-4
2	-1



Graph using the slope-intercept method.

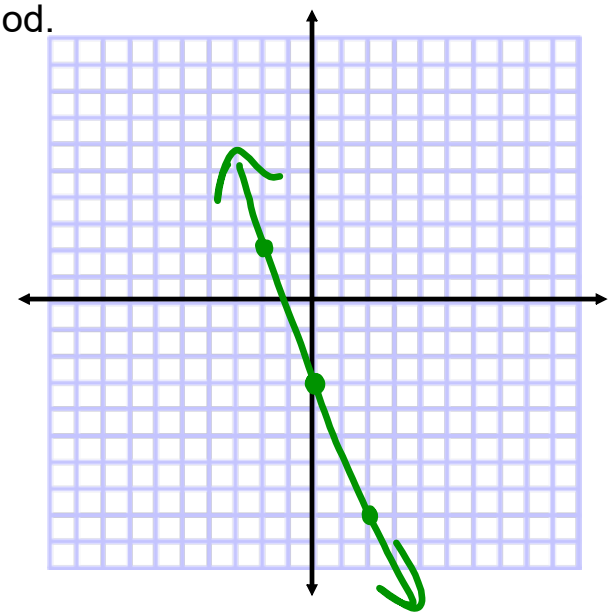
$5x+2y=-6$

$2y=-5x-6$

$y=-\frac{5}{2}x-3$

$m=-\frac{5}{2}$

$I_y: (0,-3)$

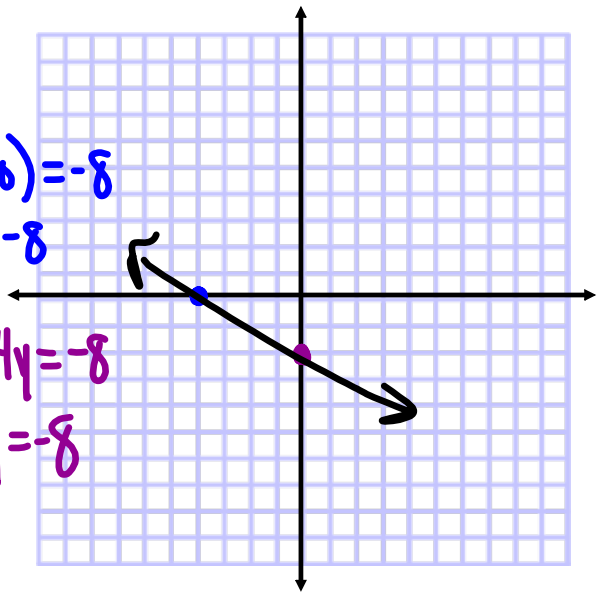


Graph using the intercept method.

$2x+4y=-8$

$I_x: (-4,0)$ $2x+4(0)=-8$, $2x=-8$

$I_y: (0,-2)$ $2(0)+4y=-8$, $4y=-8$



Solve.

$$\left[\frac{2x-3}{4}-\frac{x+4}{6}=\frac{3x-2}{8}\right]24$$

$$6(2x-3)-4(x+4)=3(3x-2)$$

$$12x-18-4x-16=9x-6$$

$$8x-34=9x-6$$

$$-28=x$$

$$x=-28$$

Functions and Relations:

- A correspondence is a rule that determines a set of ordered pairs
- A relation is any set of ordered pairs
- A function is a set of ordered pairs in which no two ordered pairs that have the same first component have different second components
  - for any one x-value there is only one y-value
  - there can only be one y-value for each x-value
  - more than one x-value can have the same y-value
  - the letter *f* is commonly used to represent a function, but any letter can be used

Functions:

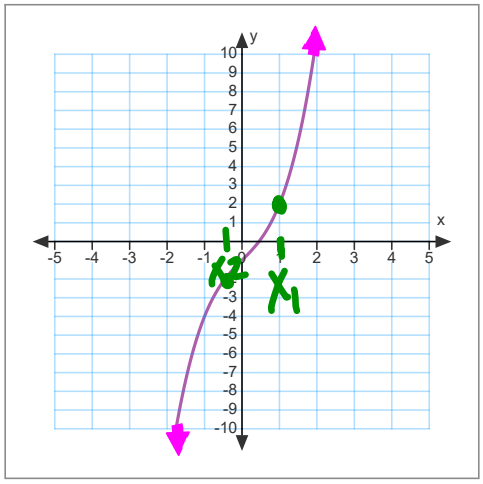
- Although a function can be described in terms of ordered pairs, most of the time they are described by an equation

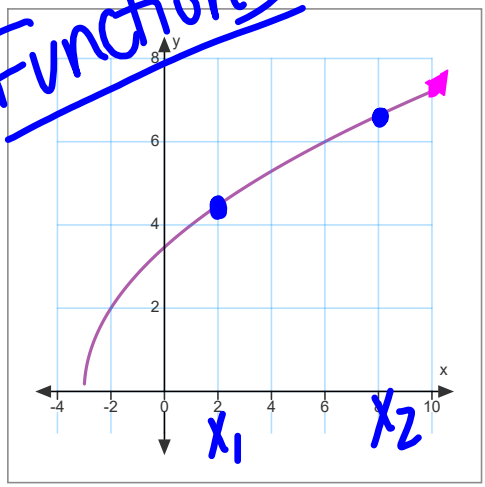
$$f(x) = x^2 + x - 3$$

$(x, y) \rightarrow (x, f(x))$

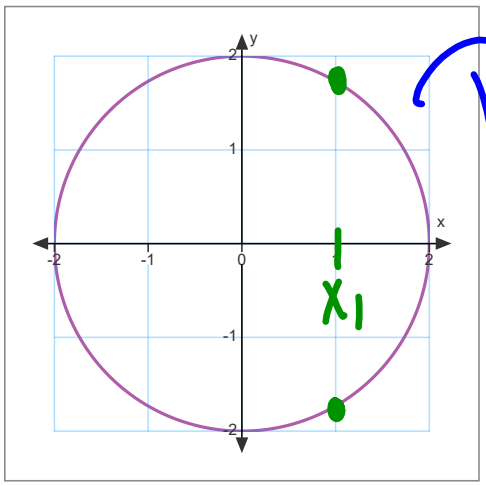
- $f(x)$ is the symbol for the number that is paired with x and it is read " f of x"
- In terms of ordered pairs, this is written as $(x, f(x))$
- It is important to remember that $f(x)$ does not mean *f* times *x*. The letter *f* stands for the function, and $f(x)$ is the number paired with *x*.

Functions and Theirs Graphs:

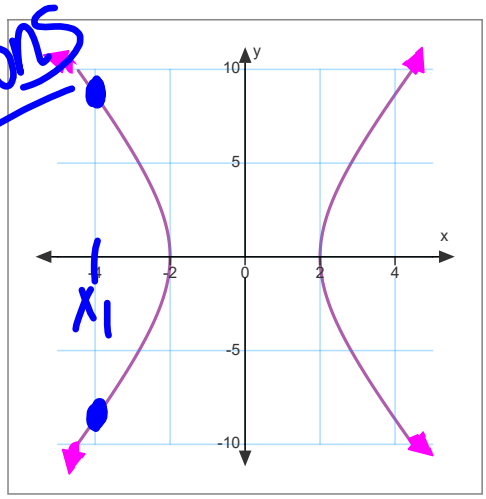




Relations and Theirs Graphs:



Relations



Evaluating A Function:

- Evaluating a function means to find the number that is paired with a given number
- We use function notation to show the evaluation
- $f(4)$ means to find the y-value paired with the x-value of 4

$$f(x) = 3x^2 - 2x + 5$$

$$f(4) = ?$$

$$f(4) = 3(4)^2 - 2(4) + 5$$

$$= 48 - 8 + 5$$

$$f(4) = 45$$

Evaluate the function at the given values:

$f(x) = 4|x-5|+4$

① $f(-2) =$

② $f(5) =$

③ $f(a) =$

① $f(-2) = 4|(-2)-5|+4$

$= 28+4$

$f(-2) = 32$

② $f(5) = 4|(5)-5|+4$

$= 0+4$

$f(5) = 4$

③ $f(a) = 4|(a)-5|+4$

$f(a) = 4|a-5|+4$

Evaluate the function at the given values:

$f(x) = -x^2 - 2x + 1$

① $f(3) =$

② $f(-2) =$

③ $f(a+h) =$

① $f(3) = -(3)^2 - 2(3) + 1$

$= -9 - 6 + 1$

$f(3) = -14$

② $f(-2) = -(-2)^2 - 2(-2) + 1$

$= -4 + 4 + 1$

$f(-2) = 1$

③ $f(a+h) = -(a+h)^2 - 2(a+h) + 1$

$= -(a+h)(a+h) - 2a - 2h + 1$

$= -(a^2 + ah + ah + h^2) - 2a - 2h + 1$

$= -a^2 - 2ah - h^2 - 2a - h + 1$

$f(a+h) = -a^2 - 2a - 2ah - h^2 - h + 1$

Evaluate the function at the given values:

$f(x) = 3x^2 - x + 1$

$g(x) = 2x - 1$

① $f(-3) =$

② $g(-2) =$

③ $f(-3) + g(-2) =$

④ $f(2+h) =$

① $f(-3) = 3(-3)^2 - (-3) + 1$

$= 27 + 3 + 1$

$f(-3) = 31$

② $g(-2) = 2(-2) - 1$

$= -4 - 1$

$g(-2) = -5$

③ $f(-3) + g(-2) = 31 - 5$

$f(-3) + g(-2) = 26$

④ $f(2+h) = 3(2+h)^2 - (2+h) + 1$

$= 3(2+h)(2+h) - 2 - h + 1$

$= 3(4 + 2h + 2h + h^2) - 2 - h + 1$

$= 12 + 12h + 3h^2 - 2 - h + 1$

$f(2+h) = 3h^2 + 11h + 11$

Assignment:

p.381 #2-34 even

* Be sure to use correct function notation! *